

2-7 Proving Segment Relationships

2-8 Proving Angle Relationships

DO NOT WRITE!

Postulate 2.8--Ruler Postulate--points on any line/segment, can be paired with any real number

Postulate 2.10--Protractor Postulate--An angle can be positioned so that one ray ends with 0 and the other is between 0 and 180.

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Postulate 2.9--The Segment Addition Postulate--If B is between A and C, and A, B, and C are collinear, then $AB + BC = AC$



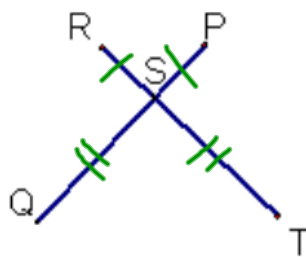
Postulate 2.11--The Angle Addition Postulate--If R is in the interior of $\angle PQS$, then $m\angle PQR + m\angle RQS = m\angle PQS$

$\angle PQS$, then



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Example 1

Given: $RS = PS$; $ST = SQ$ Prove: $RT = PQ$ 

Statements

Reasons

① $RS = PS$; $ST = SQ$	① Given
② $RS + ST = PS + SQ$	② Addition
③ $RT = RS + ST$ $PQ = PS + SQ$	③ Segment Add. Post.
④ $RT = PQ$	④ Substitution

Oct 10-10:00 AM

Example 2

Given: $LM = NO$ Prove: $\overline{LN} \cong \overline{MO}$ 

Statements

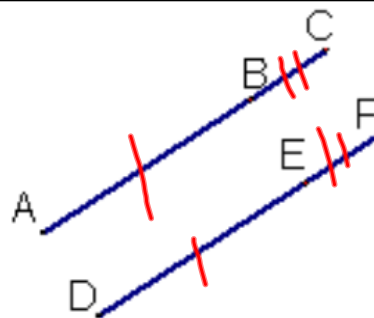
Reasons

① $LM = NO$	① Given
② $MN = MN$	② Reflexive
③ $LM + MN = NO + MN$	③ Addition
④ $LN = LM + MN$ $MO = NO + MN$	④ Segment Add. Post.
⑤ $LN = MO$	⑤ Substitution
⑥ $\overline{LN} \cong \overline{MO}$	⑥ Def. of \cong

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DO:

Given: $AB = DE$; $BC = EF$

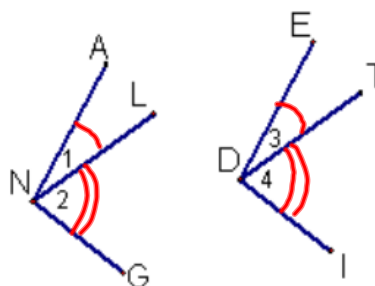
Prove: $AC = DF$


Statements	Reason
	① Given
	② Add
	③ Segm + Post
	④ Subst.

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EXAMPLE 4:

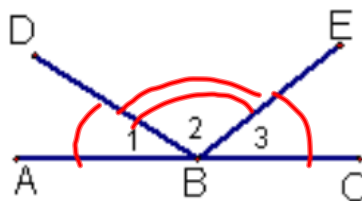
Given: $m\angle 1 = m\angle 3$; $m\angle 2 = m\angle 4$

Prove: $m\angle ANG = m\angle EDI$


Statements	Reason
① $m\angle 1 = m\angle 3$; $m\angle 2 = m\angle 4$	① Given
② $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	② Addition
③ $m\angle ANG = m\angle 1 + m\angle 2$ $m\angle EDI = m\angle 3 + m\angle 4$	③ Angle Add. Post.
④ $m\angle ANG = m\angle EDI$	④ Substitution

Oct 10-10:00 AM

EXAMPLE 5:

Given: $m\angle 1 = m\angle 3$ Prove: $m\angle ABE = m\angle DBC$ 

Statements	Reasons
① $m\angle 1 = m\angle 3$	① Given
② $m\angle 2 = m\angle 2$	② Reflexive
③ $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$	③ Add
④ $m\angle ABE = m\angle 1 + m\angle 2$ $m\angle DBC = m\angle 2 + m\angle 3$	④ \angle + Post.
⑤ $m\angle ABE = m\angle DBC$	⑤ Subst.

Oct 10-10:00 AM

HW

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Oct 10-10:09 AM